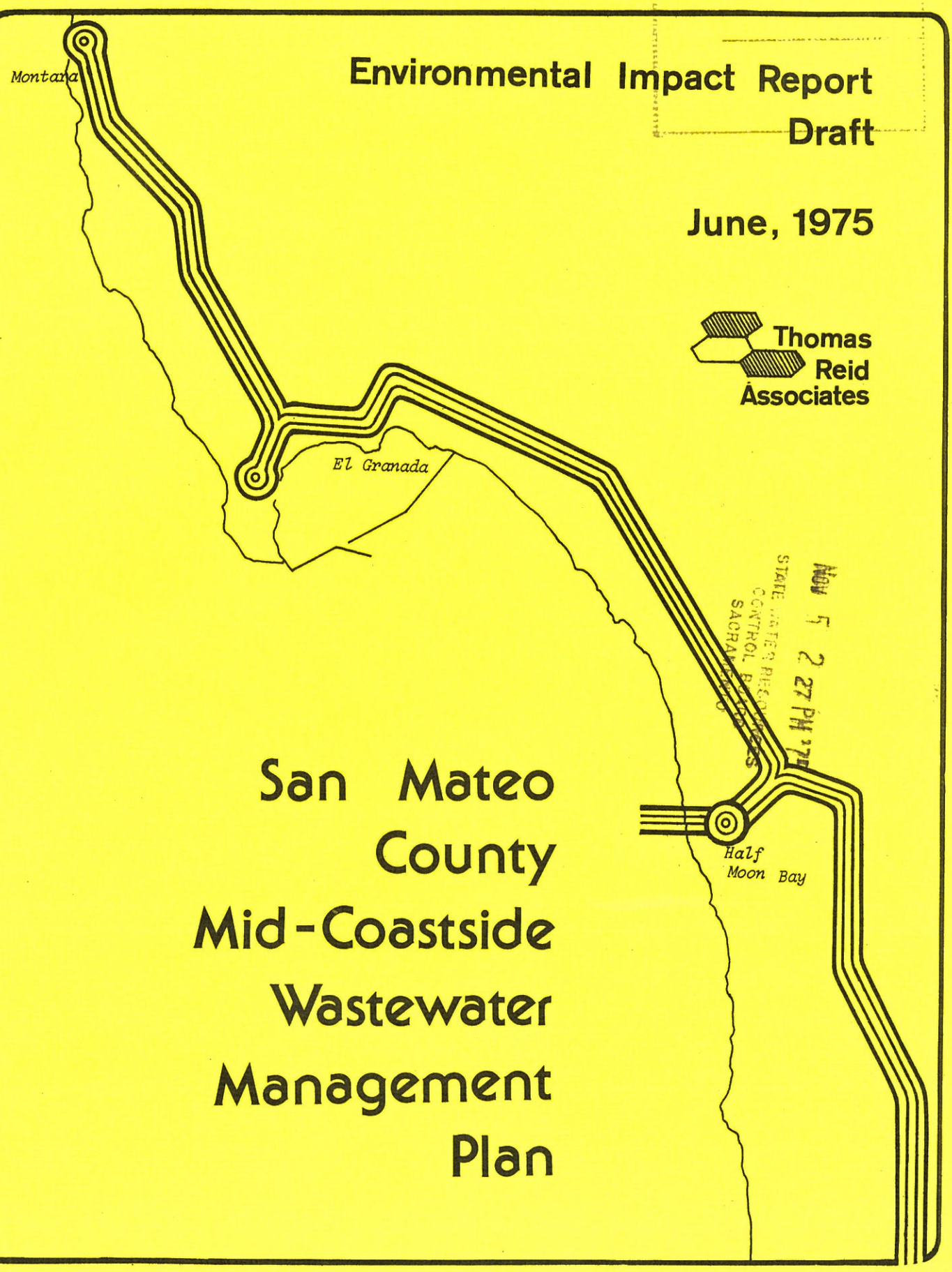
SUMMARY



Environmental Impact Report

Draft

June, 1975

Thomas Reid Associates

San Mateo County Mid-Coastside Wastewater Management Plan

SAN MATEO COUNTY MID-COASTSIDE WASTEWATER MANAGEMENT PLAN

DRAFT ENVIRONMENTAL IMPACT REPORT

June, 1975

Prepared for Joint Exercise of Powers
Montara Sanitary District
El Granada Sanitary District
City of Half Moon Bay

Lead Agency:
City of Half Moon Bay
501 Main Street
Half Moon Bay, CA 94019
(415) 726-5566

Prepared by:
Karen G. Weissman
Thomas S. Reid
W. Paul Weatherly
Benjamin R. Roberts
Frank Fitch

Thomas Reid Associates
Box 872
Palo Alto, CA 94302
(415) 327-0429

TABLE OF CONTENTS

[This Section Does Not Appear in the Summary]

[This Section Does Not Appear in the Summary]

TABLES AND FIGURES

PREFACE

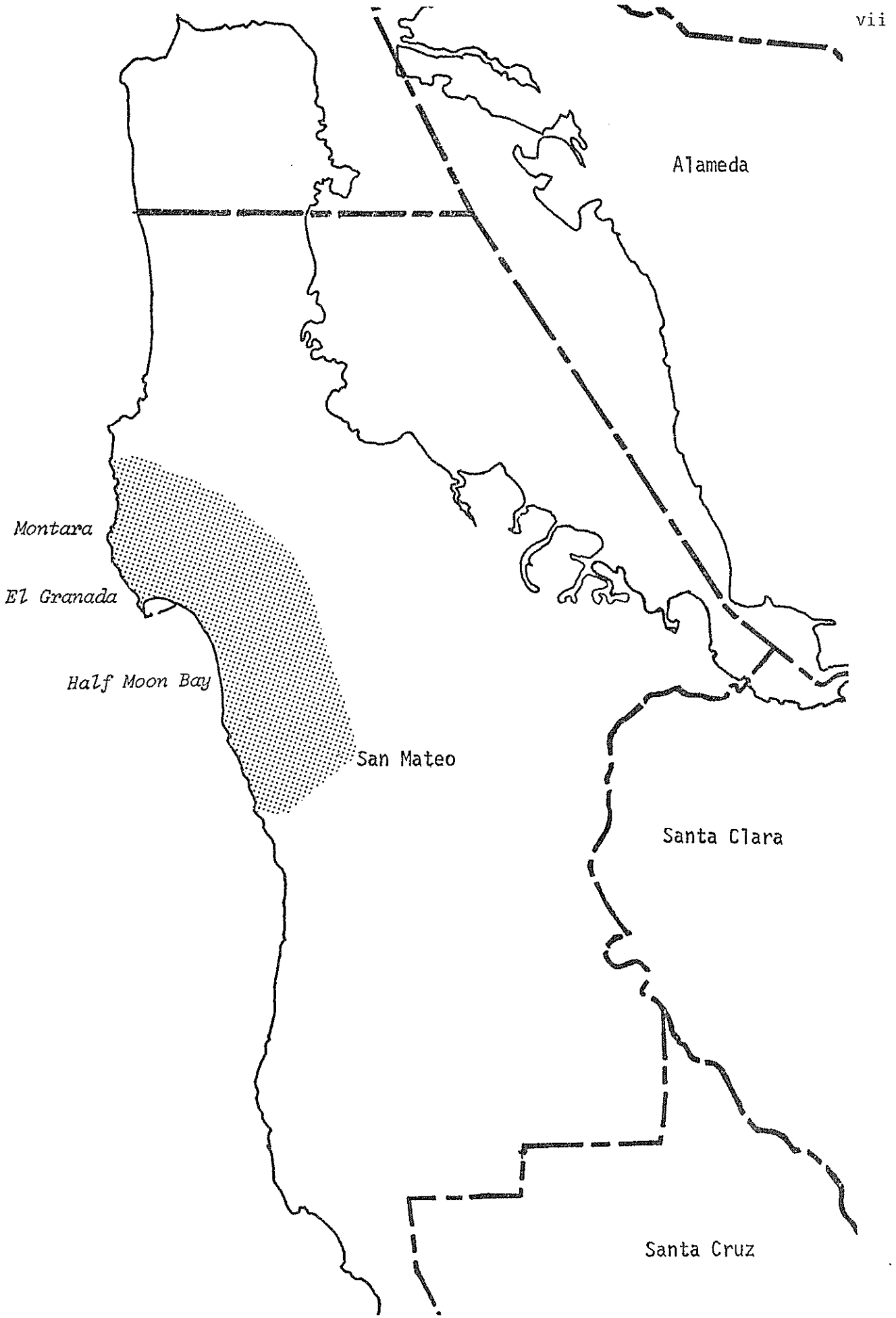
Wastewater management is a long-standing issue on the San Mateo Mid-Coastside. There have been a variety of studies conducted over past years concerned with the level of wastewater treatment required, with the costs of treatment, with the size and distribution of the ultimate population served, and with environmental impact. The present project under consideration is a cumulation of previous engineering studies and proposes a system of three treatment plants with a single common ocean outfall for disposal of treated wastewater. In this study, we will analyze and report the anticipated environmental impacts of the proposed wastewater management program.

There are two aspects of this program which require particular attention. First is the obvious intent of the wastewater management program to ameliorate and to improve the water quality of the region. The principal motivation for the project is to satisfy the federally mandated NPDES water quality and effluent standards. Second, a wastewater treatment facility is essentially a population-serving utility and inasmuch as an expanded or upgraded wastewater management program may accommodate population growth, it is necessary to consider the secondary environmental impacts of the population served. The direct environmental impacts of this project are small: ten miles of pipeline and one or two acres of new construction will be required, but this will take place in an area of low intensity development and is not in itself expected to cause severely adverse environmental effects. The most important direct impact will be due to ocean disposal of treated wastes. A major impact of the project will be the indirect effects. In this study, we will place particular emphasis on the topics of water quality and land use.

Basically, the water quality issue is one of goals and the prospects for success in achieving those goals. The principal effort of the project design undertaken by the engineering consultants is to meet the water quality objectives established for the Mid-Coastside by the State of California Regional Water Quality Control Board. In their approach to the water quality problem, the project engineers have considered the existing wastewater characteristics of the Mid-Coastside region and the oceanographic and geohydrologic character of the area. The project facilities are expected to adequately treat the community's wastewater in order to meet the effluent standards. Most of the alternatives to the project are concerned, not with the facilities design or with total capacity, but rather with the geographic placement of the facilities themselves. A thorough discussion of the engineering aspects of the water quality issue may be found in the project report which is a companion volume to this EIR.

The question of land use is fundamentally a question of population growth in this region. The combined treatment capacity expected for the completed wastewater management program will be 2.0 million gallons per day (mgd)

LOCATION MIDCOASTSIDE STUDY AREA



which will accommodate an ultimate service population of 28,500 at the present wastewater generation rates. This figure represents a doubling of the present Mid-Coastside population of 11,700 (1974). The magnitude of the projected service population is important for two reasons.

Most practically, the eligibility of the program for State and Federal Clean Water Grant monies is determined on the basis of a conservative population projection called E-Zero. If a wastewater agency plans for facilities in excess of those required to meet the E-Zero population projection for the area that excess capacity is not deemed eligible for the 87½% grant funding. On the Mid-Coastside, the E-Zero projection by the State Department of Finance has a 1986 population of 13,500 for the study area and 1996 population of 14,600. The growth accommodated by this project (at existing per capita wastewater generation rates) is nearly twice the 1996 E-Zero projection. This will naturally increase the proportion and the overall level of local funding required for the project.

Mid-Coastside E-0 Growth Population

1970	1974	1976	1986	1996	% Change from 1974	% Change Per Year
9,533	11,100	11,500	13,500	14,600	32	1.45

A second consideration is the environmental impact of the project service population. Growth in the Mid-Coastside will be accompanied by increased traffic, energy consumption, air emissions, demand for utilities and facilities and by changes in land use including conversion of agricultural land to residential. The complex of population impacts is certainly not a direct result of the facility construction proposed, but it is an inescapable result of the anticipated growth upon which the project design is based. The project does not propose that level of growth as a policy goal. In principle it is only responding to previously established goals which are an integral part of the system of services that are necessary for growth to occur. Since the project makes growth possible, the impacts of growth are indirect consequences of the project.

In order to assess the indirect impacts on the environmental quality of both the Mid-Coastside and the Bay Region, it is necessary to explore in some detail the character of existing land uses in the area. This EIR is not the first study to examine this question - regional and local agencies concerned with planning the Mid-Coastside future have made projections and forecast impacts. Their work has been an important background to this EIR. The purpose of this study, however, is slightly different in that it must assess the impact of whatever growth would be accommodated by the project, rather than assess the impact of a particular type of growth that would result from a particular policy proposal, such as a coastal zone plan or a city general plan.

The objective for this EIR is to assess the impact of probable area growth, not ideal growth. The analysis is conservative, based primarily on existing Mid-Coastside characteristics. Future water consumption and wastewater generation per capita are assumed to remain near present levels since that provides the maximum reasonable service population estimate for these utilities. Similarly, projected housing density in the EIR is lower than in some area plans because it illustrates the maximum impact on agriculture; out-commute projections are high to show maximum probable traffic and air quality impact.

The emphasis in this study is on adverse impact. There are a variety of conditions that could reduce this impact - agricultural conservation, local

employment, public transit, emissions controls, etc. Many of these are proposed to be public policy for the Mid-Coastside. Until these measures are shown to be effective, however, the potential impact of growth in the area remains great. The present trend toward suburbanization of the Mid-Coastside is strong, creating the conflict between in-migration demand for housing and conservation of existing environmental quality.

This study assumes that the in-migration demand will persist and that land use economy will continue to be a major growth determinant. To the degree to which developing public policy for the Mid-Coastside is effective in controlling growth rate and growth character, then the level of impact described in this report will not be reached.

1 PROJECT

The proposed Wastewater Management Program concerns the Mid-Coastside area of San Mateo County, California. The study area comprises three principal communities: The City of Half Moon Bay to the south, the unincorporated area of El Granada, just north of Half Moon Bay, and the unincorporated community of Montara - Moss Beach, at the north end of the study area. The 1975 population of these communities is approximately 6,000 for Half Moon Bay, and 3,000 each for Montara and El Granada. The residential population is served by a small commercial district. There is little industry and the principal land-intensive economic activity on the Mid-Coastside is agriculture. This includes grazing, truck farming, floriculture, and green houses. One highly significant use of the Mid-Coastside is the recreational day use of the State and County beaches.

Access to the Mid-Coastside for recreational use as well as for residence is by two principal routes: State Route One running along the California Coast becomes a heavy duty arterial at Half Moon Bay and extends north past Devil's Slide into Pacifica, Daly City and, ultimately, San Francisco. State Route 92 connects the Mid-Coastside with the remainder of San Mateo County and extends from the City of Half Moon Bay east over the coastal mountains.

The topography of the Mid-Coastside is characterized by relatively flat marine terraces along the shore with a backdrop of abrupt and ruggedly steep hillsides, reaching well over a 1,000 feet and forming the backbone of the San Francisco Peninsula. The steep ridges give the Coastside its isolated quality as they make access difficult and prohibit the creep of urbanization from the Bay Plain from the east. The gentle slope of land at the water's edge where the communities of Half Moon Bay, El Granada, and Montara lie, continues at a low slope into the Pacific Ocean. The ocean depth reaches 100 feet at a distance of a mile or more from the coast. The topography of the Coastside is of vital importance as it determines not only the aesthetic quality of the area but serves also to delineate land use patterns, to control the climatic effect on air quality, and within the ocean, serves to delineate the problem of effluent disposal.

The Mid-Coastside shares the cool California marine climate with other coastal locations. Although subject to the same seasonal variation in rainfall that the entire California region experiences, the alteration of dry and wet seasons is tempered by the constant cooling influence of the Pacific and by the tendency for summer fogs, which reduce the drying effect of summer weather. It is this climatic condition which favors the cultivation of certain vegetables and flowers.

Waste Water Treatment Facilities

Existing waste water treatment is provided by three sewage agencies: the Municipal Service by the City of Half Moon Bay and the El Granada and Montara Sanitary Districts. Each operate treatment plants. The design capacity of the Half Moon Bay plant is 1.0 million gallons per day (mgd); existing average dry weather flow is equivalent to the annual average flow of 0.4 mgd. The maximum wet weather flow is 0.6 mgd. The Half Moon Bay plant has secondary treatment with chlorination. All effluent

is disposed of through an ocean outfall, located near the plant at Half Moon Bay itself. This outfall has been recently extended in order to meet Water Quality Control Board requirements which will limit discharge to 0.6 mgd. The Montara Treatment facility has an initial design capacity of 0.5 mgd, existing average dry weather flow of 0.2 mgd. The average annual flow is 0.4 mgd, and the maximum wet weather flow is 0.6 mgd. This plant delivers a secondary treated effluent to a short outfall located in the rocky area off Pt. Montara, south of Montara Beach. The treatment plant in El Granada offers only primary treatment prior to ocean disposal near the plant. Design capacity is 0.3 mgd; existing average dry weather flow is slightly over 0.2 mgd (average annual flow = 0.3 mgd, maximum wet weather = 0.4 mgd).

Prior to the construction of these facilities in the late 1950's and early 1960's, the population of the Mid-Coastside was served by domestic septic tanks or by the collection and discharge of untreated waste directly to the ocean. The present facilities, then, have made urbanization of the area possible and have also mitigated the water quality impacts from the population's sewage.

The total treatment capacity for the existing wastewater facilities on the Mid-Coastside are 1.8 mgd. At the present wastewater generation figure of 70 gallons per capita (gpc), this existing capacity would serve a population of 25,700 persons; with a wastewater generation of 100 gpc used as a facilities design criterion, existing capacity would serve 18,000 persons in the Study Area. At present, approximately 90% of the population in this area is sewered and, thus, the discussion of capacity and service population may be considered to concern the entire population.

With regard to new facilities, there are three components which serve as design criteria. Most obviously, one criterion is the level of wastewater treatment. All alternatives considered for this wastewater program would provide secondary treated effluent. This level of treatment removes the majority (90-95%) of suspended solids and biochemical oxygen demand(BOD) from the wastewater stream, provides disinfection by chlorination of the effluent, but does not provide any appreciable removal of inorganic nutrients, such as nitrate and phosphate (removes 25-33%) or removal of heavy metals, boron or toxic substances which may enter the wastewater system.

The second design criterion is the requirement for disposal of treated effluent. Presently, all effluent is discharged into the Pacific Ocean or Half Moon Bay. All alternatives considered for this project provide for ocean or bay disposal of treated effluent, but also include a consideration of some degree of land disposal or reclamation and re-use of treated water. The ocean disposal itself is subject to various considerations. In particular, there are State regulations prohibiting discharge of treated wastes in areas of biologic sensitivity, within rocky bottom areas or within 1,000 feet of the shore. These outfall requirements indicate that Half Moon Bay is a preferable location for disposal as well as Miramontes Point, farther south, in spite of the rockiness of the bottom near shore.

A third consideration in the wastewater program design is the degree of regionalization which will be achieved by the facilities program. Regionalization can be considered both a problem of geographic location and a problem of level of integration. The present facilities are located at three separate

PROJECTED WASTEWATER QUANTITIES AND CHARACTERISTICS

Parameter	Montara S. D. 1985	Montara S. D. 1995	Granada S. D. 1985	Granada S. D. 1995	Half Moon Bay S. D. 1985	Half Moon Bay S. D. 1995
Population	2750-4450	3200-5800	3350-5650	3900-7400	5200-16,000	6000-22,500
Average Daily Dry Weather Flow						
gpcd	90	100	85	100	85	100
mgd - low	0.25-	0.32-	.28-	0.39-	0.44-	0.60-
- high	0.40	0.58	0.48	0.74	1.36	2.25
Peak Daily Dry Weather Flow, mgd						
mgd - low	0.5-	0.6-	0.6-	0.8-	0.8-	
- high	0.8	1.1	0.9	1.3	2.2	3.6
Peak Weather Flow						
Infiltration Allowance						
gpad	570	500	600	500	1000	500
Infiltration, mgd	0.6	0.6	0.6	0.7	1.7	1.7
Peak, mgd	1.1-1.4	1.2-1.7	1.2-1.5	1.5-2.0	2.5-3.9	2.8-5.5
Biochemical Oxygen Demand						
ppcd	0.14	0.17	0.15	0.17	0.15	0.17
ppd	380-620	540-990	500-850	660-1260	780-2400	1020-3820
Suspended Solids						
ppcd	0.17	0.20	0.15	0.20	0.14	0.20
ppd	470-760	640-1160	500-580	780-1480	732-2240	1200-4500

gpad = Gallons per acre per day.
ppd = Pounds per day.

1973 EXISTING AVERAGE UNIT FLOW AND QUALITY PARAMETERS

Parameter	Montara S. D.	Granada S. D.	City of Half Moon Bay
ADDWF, mgd	0.2	0.2	0.3
PDDWF, mgd	0.8	0.4	0.5
PWWF, mgd	1.3	0.8	1.8
I/I mgd	0.5	0.4	1.3
Per Capita Contributions:			
Population	2910	3036	4917
Flow, gpcd	70	65	61
BOD, ppcd	0.08	0.14	0.11
SS, ppcd	0.10	0.13	0.07

Source : Project Report

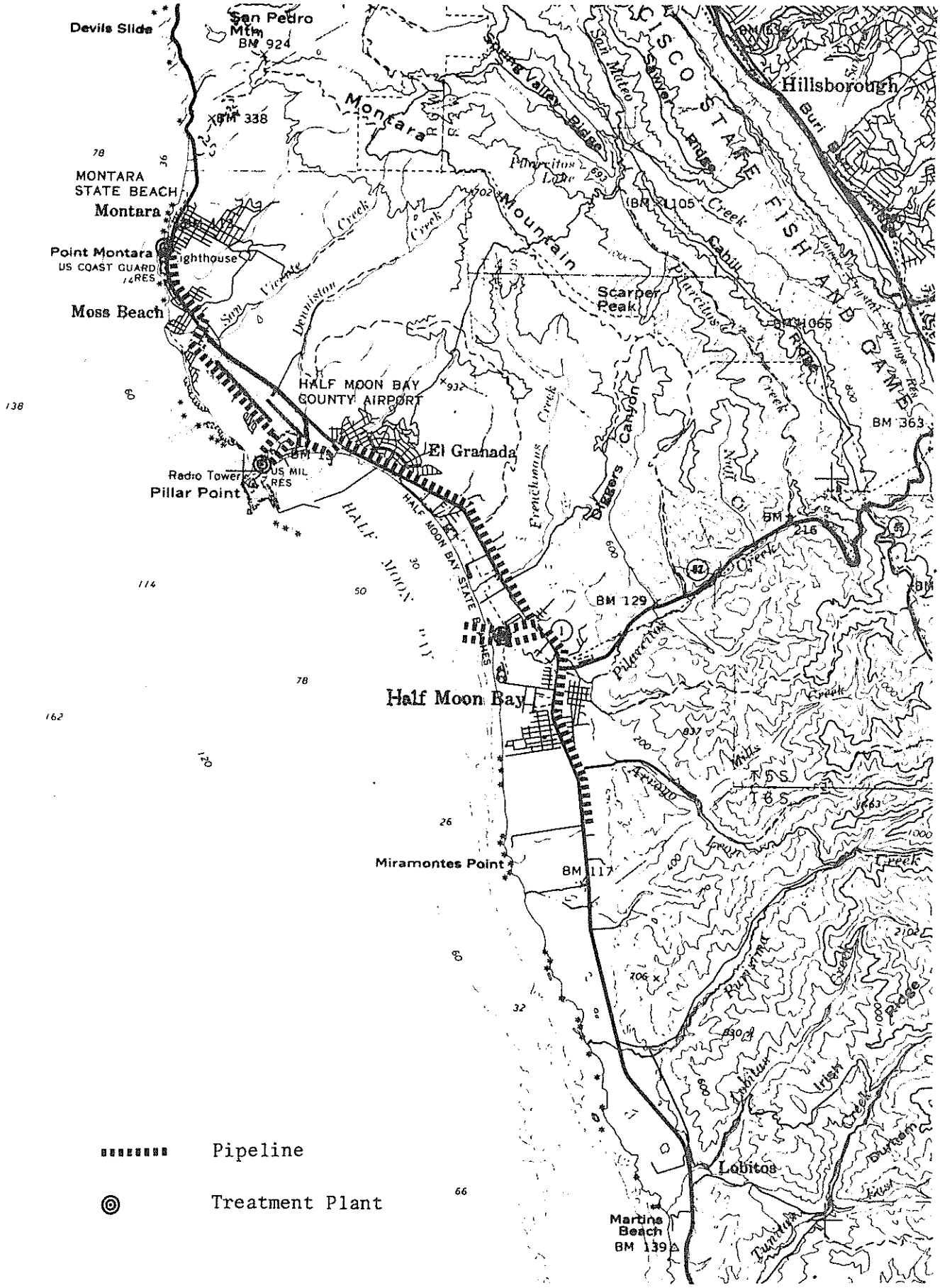
geographic locations. It is conceivable that the service areas of any two districts could be combined and treated by one sub-regional plant, or the entire Mid-Coastside could be served by a single, regional treatment plant. Integration refers to the level of operation which may be regionalized. At the lowest level, it is possible to combine only the treated effluent from three separate facilities and to dispose of it in a single regional ocean outfall. One step above this would be to retain separate treatment facilities, but to provide for operation, maintenance and water quality control by one overseeing agency. A third degree of regionalization would entail collection at three existing points, interception of the untreated waste and treatment by a single regional plant located at the point of ocean outfall. The ultimate regionalization would occur if the three existing separate sewer agencies were to be combined for the purposes of permit administration. The latter regionalization of political institutions is not a necessary part of either a regional treatment plant or a regional outfall location. It is possible and, in fact, traditional to retain local agency jurisdictions even with a large degree of physical facility consolidation.

The alternatives for project design which were set forth by the project engineers include varying degrees of treatment and disposal regionalization. There were seven design alternatives which were considered through 1974. One of these, Plan A, has been selected by the Joint Exercise of Powers Association of the three sewer agencies as the "apparent best alternative." This means that Plan A has been selected as the most appropriate design for the purposes of impact analysis and initial review by State and Federal funding agencies. Plan A, briefly, provides for collection and treatment of wastewater at the three plant locations with common ocean disposal in Half Moon Bay.

An alternative to Plan A which has been requested for study by the State Water Quality Control Board is Plan F, which provides for collection of untreated wastes at the present locations and transmission of these wastes to a single regional treatment facility to be located in Half Moon Bay.

In addition to the principal and secondary alternatives, we will consider briefly the other five design possibilities as well as the "No-Project" alternative. A description of both the apparent best alternative, Plan A, and the secondary alternative, Plan F, along with the five other alternatives is provided by an excerpt from the engineer's project report at the end of this section.

Aside from facilities configuration, it is necessary to consider both alternative disposal methods for treated wastewater and alternative outfall locations. The disposal alternatives include ocean disposal, land "disposal" by reclamation and land disposal by ground water recharge. The economic, environmental and land use implications of disposal alternatives will be considered throughout this report. The ocean outfall location will be discussed under the section on Water Quality, but may be viewed as a second phase determination for the wastewater management program itself; that is, the present project report and environmental impact report are concerned primarily with the fundamental water quality objectives and the exact outfall location need be specified only at some future time when the appropriate oceanographic studies have been conducted.


Devils Slide
San Pedro Mtn
BM 924
BM 338
MONTARA STATE BEACH
Montara
Point Montara
Lighthouse
US COAST GUARD RES
Moss Beach
Montara Mountain
Scarper Peak
BM 1105
BM 1065
Hillsborough
COASTAL FISH AND GAME
HALF MOON BAY COUNTY AIRPORT
El Granada
Radio Tower
US MIL RES
Pillar Point
BM 129
Half Moon Bay
Miramontes Point
BM 117
BM 363
BM 216
Lobitos
Martins Beach
BM 139
Pipeline
Treatment Plant

PROPOSED PROJECT -- APPARENT BEST ALTERNATIVE

PLAN A - Local Treatment With Combined Effluent Disposal to Half Moon Bay (or South Bay)

Under this alternative, the existing primary plant at Granada would be enlarged and upgraded to a full 0.5 MGD secondary facility. This alternative would also include the upgrading of the existing wastewater treatment facilities at Montara and Half Moon Bay. Three effluent pumping stations and a combination of force mains and gravity pipelines would carry treated wastewater to a common chlorination system which would discharge to an irrigation system for a local golf course or during the rainy season discharge to a submarine outfall at Half Moon Bay or near Miramontes Point.

MAJOR ALTERNATIVE TO PROPOSED PROJECT

PLAN F - Consolidation to Regional Treatment and Disposal Facilities

In this alternative, the treatment facilities at Montara and Granada would be abandoned and a new 2.0 MGD facility would be constructed at Half Moon Bay. Much of the existing equipment and facilities at the existing Half Moon Bay facility would be utilized in the regional plant. Two raw wastewater pumping stations would be constructed with the necessary transmission lines for carrying the flow to the regional facility. After treatment the effluent would be chlorinated and pumped to the golf course and other reclaimed waste users or, during the rainy season, discharged through the existing outfall plus a new parallel outfall at Half Moon Bay or a new submarine outfall located off Miramontes Point.

MINOR STRUCTURAL ALTERNATIVES TO PROPOSED PROJECT

PLAN B - Partial Consolidation With Effluent Disposal to North Montara and Half Moon Bay (or South Bay)

Under this alternative the primary treatment facility at Granada would be abandoned and raw wastewater flow would be pumped to an enlarged and upgraded Half Moon Bay sub-regional plant. As in Plan A, this flow will be pumped to a common chlorination facility for distribution to a reclamation system or to a submarine outfall at Half Moon Bay or Miramontes Point. The treatment facility at Montara will be upgraded and the flow pumped to a submarine outfall located at Montara Beach.

PLAN C - Local Treatment With Effluent Disposal to North Montara and Half Moon Bay

This alternative allows the existing facility at Granada to be upgraded and expanded to 0.5 MGD primary. The primary treated waste will then be pumped to an enlarged and upgraded secondary treatment facility at Montara. As in Plan B this effluent will be discharged through a new submarine outfall at Montara Beach.

The treatment facility at Half Moon Bay will be upgraded and the effluent will be used for reclamation or discharged through a submarine outfall at Half Moon Bay.

PLAN D - Partial Consolidation With Effluent Disposal to North Montara and Half Moon Bay

This alternative is similar to Alternative B; however, the flow instead of going to Half Moon Bay will be pumped to Montara where existing facilities will be upgraded and enlarged to accommodate the increased hydraulic flow and organic loading. The discharge will be at Montara Beach as in Alternative C. The Half Moon Bay treatment facility will be upgraded and its effluent discharged to Half Moon Bay using the existing outfall.

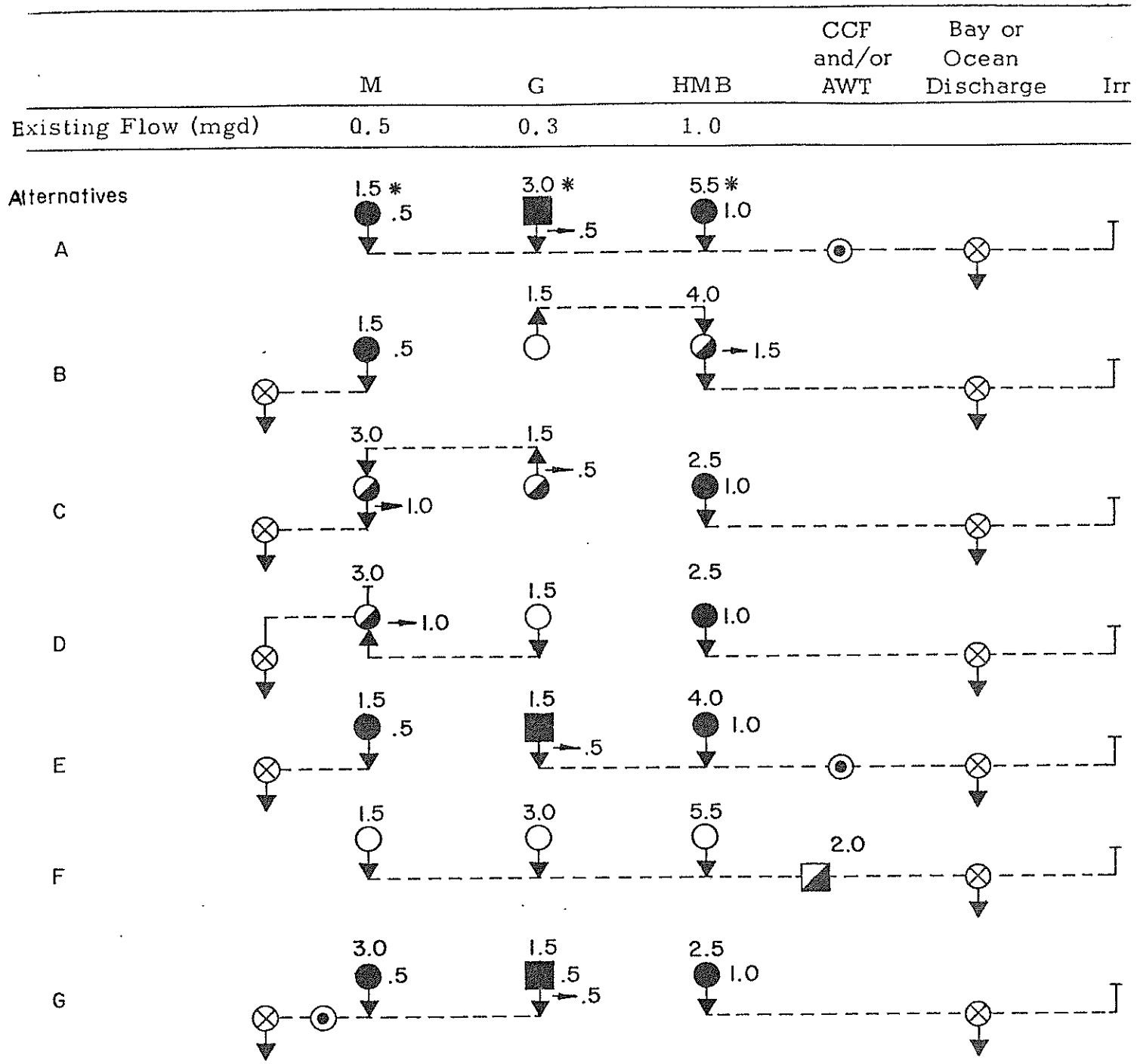
PLAN E - Local Treatment With Effluent to North Montara and Half Moon Bay (or South Bay)

This alternative is similar to Plan A with the exception that secondary effluent from Granada will flow to a common chlorination system at Half Moon Bay and be discharged with the Half Moon Bay effluent to the Bay or at Miramontes Point. Half Moon Bay and Montara treatment facilities will be upgraded. Montara effluent would be discharged at Montara Beach.

PLAN G - Local Treatment With Effluent Disposal to North Montara and Half Moon Bay

This alternative is similar to Alternative E, where Granada would be expanded and upgraded to a secondary treatment facility. The plant would utilize a common chlorination system with Montara along with a common outfall at Montara Beach.

The Half Moon Bay treatment facility would be upgraded and its effluent utilized for reclamation or during the rainy season be discharged through the existing Half Moon Bay outfall.



*Peak flows for pumping

● Keeping and/or upgrading at exist. capacity.

○ Abandoning a system.

◐ Enlarging and/or upgrading an exist. system in its present degree of treatment.

■ Enlarge and upgrade to secondary.

◪ New secondary.

Flow to reclamation/reuse..

⊗ Discharge through new ocean outfall.

---Common effluent lines.

◎ Common chlorination & possible AWT

→.5 Enlarge from present capacity to 0.5 mgd.

A = AWT
M = Montara
G = Granada
CCF/AWT = Common chlorination and/or Advance waste treat-
HMB = Half Moon Bay